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Part III

Department of the Interior

National Park Service

36 CFR Part 13

Glacier Bay National Park and Preserve,
Alaska; Protection of Humpback Whales;
Proposed Rule

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DEPARTMENT OF THE INTERIOR

National Park Service

36 CFR Part 13

Glacier Bay National Park and Preserve, Alaska; Protection of Humpback Whales

AGENCY: National Park Service, Interior.

ACTION: Proposed rule.

SUMMARY: The National Park Service is proposing permanent regulations for the protection of the humpback whale, an endangered species, at Glacier Bay National Park and Preserve. These regulations would establish a permit system, vessel operating restrictions, and a mechanism for designating whale waters and vessel limits; in addition, they would prohibit the harvest of certain species of fish and crustaceans which are prey species of the humpback whale. These regulations would replace temporary regulations which expired in 1983.

DATE: Written comments, suggestions, or objections will be accepted until May 18, 1984.

ADDRESS: Comments should be addressed to: Superintendent, Glacier Bay National Park and Preserve, Bartlett Cove, Gustavus, Alaska 99826.

FOR FURTHER INFORMATION CONTACT: Michael Tollefson, Superintendent, Glacier Bay National Park and Preserve, Bartlett Cove, Gustavus, Alaska 99826, Telephone: (907) 697-3341.

SUPPLEMENTARY INFORMATION:**Background**

Glacier Bay, a marine body of water within Glacier Bay National Park and Preserve, has been recognized since the early 1960's as a summer feeding ground for the humpback whale, a declining species placed on the Endangered Species list in 1970. Research conducted in the 1970s established that 10-24 whales used the Bay for summer feeding during the several years prior to 1978. This pattern drastically changed in 1978, however, when approximately 17 of 20 identified whales abandoned the Bay shortly after entering it. Only three whales remained for the summer. This reduced level of whale use occurred again 1979. On August 6, 1979, in accordance with the Endangered Species Act, the National Park Service ("NPS" or "Service") requested a formal consultation with the National Marine Fisheries Service ("NMFS") to assess the problem. NMFS concluded that the uncontrolled increase of vessel traffic, especially erratically traveling craft, may have altered humpback behavior,

and that a continued increase in vessel traffic was likely to further jeopardize the existence of the humpback whale in Southeast Alaska. NMFS recommended that vessel traffic be restricted to 1976 levels, additional research be conducted, and regulations be promulgated to address vessel routing, maneuvering, and speed.

Responding to the NMFS opinion, the Service published two sets of regulations in 1980 to protect the humpback whale in Glacier Bay. One set concerned cruise ship activity as well as vessel routing, maneuvering, and speed. See 45 FR 32228 (May 15, 1980) (codified at 36 CFR 7.23 (b)-(d) (1982)). In summary, these regulations limited the entry of cruise ships into Glacier Bay to 89 vessels during the whale season (June 1 through August 31), with not more than two entries per day. Regardless of the size or type of vessel, all motorized vessels were prohibited from intentionally positioning themselves closer than one-fourth nautical mile from a whale, or otherwise pursuing or attempting to pursue a whale. In the event of a vessel-whale encounter, these regulations established certain vessel operation requirements to restore the one-fourth nautical mile separation with minimal disturbance to the whale. Finally, the regulations authorized the superintendent to designate areas in Glacier Bay as "whale waters" where vessels were required to maintain a constant speed (not to exceed 10 knots) and course, except to avoid coming within ¼ nautical mile of a whale.

The second set of regulations addressed small boat activity and a limited category of commercial fishing in Glacier Bay. See 45 FR 32234 (May 15, 1980), 45 FR 85471 (December 30, 1980) (codified at 36 CFR 7.23 (e)-(f) (1982); 46 FR 50370 (October 13, 1981) (codified at 36 CFR 7.23(q) (1982)). These regulations limited small vessel entries into Glacier Bay to 538 (339 private vessels) during the whale season. They also prohibited commercial harvesting of major organisms upon which humpback whales feed.

The Service intended these two sets of regulations to be temporary pending the completion of more conclusive research on the whales at Glacier Bay. Upon completion of the research, the Service intended again to request formal consultation with NMFS and thereafter to propose appropriate changes in the regulations. In order to review the research data, obtain an opinion from NMFS, and develop appropriate regulations, the Service extended the temporary regulations applicable to vessel operations and entries until August 31, 1983, and the regulations

dealing with whale prey species until December 31, 1983, 48 FR 21947 (May 16, 1983). Thus, the Service prevented an "unregulated situation" for the humpback whale in Glacier Bay, a situation which NMFS warned could have disrupted the whale's behavior contrary to the mandates of the Endangered Species Act and other law.

On June 22, 1983, NMFS issued its second Biological Opinion which stated in part:

Based on our recent review of new research as well as additional information, NMFS concludes that current NPS operational and total vessel numbers restrictions are not likely to jeopardize the continued existence of the Southeast Alaska stock of humpback whales. We also reiterate the conclusion in our 1979 Biological Opinion that if the amount of vessel use were allowed to increase without limit in Glacier Bay, or if present vessel operational restrictions were removed the associated disturbance would be likely to jeopardize the continued existence of the Southeast Alaska humpback whale stock.

The amount of vessel use that would have the effect of total displacement from Glacier Bay cannot now be defined or predicated. We believe some increase in the amount of vessel use can occur without jeopardizing the continued existence of the Southeast Alaska humpback whale stock, provided increases are implemented in a conservative manner and with an appropriate monitoring program.

Consultation must be reinitiated if new information reveals impacts of the proposed activities that may affect the humpback whale, if the identified activities are modified in a manner not considered during the consultation, or if a new species is listed or critical habitat designated that may be affected by the proposed activities.

After reviewing the Biological Opinion, the Service met with NMFS in August, 1983 to clarify certain aspects and to discuss permanent regulations. Based on those meetings, the biological opinion itself, and additional research and monitoring conducted by the National Park Service, the Service has concluded that failure to implement protective regulations would be detrimental to the humpback whale in Glacier Bay and perhaps jeopardize the continued existence of the Southeast Alaska humpback whale stock.

Section by Section Analysis

Since promulgating the temporary regulations, the Service has moved all regulations for Alaska park areas to Part 13 of Title 36 of the Code of Federal Regulations. Consequently, the Glacier Bay whale regulations no longer appear at § 7.23 of title 36. Instead, the regulations proposed herein would be codified, after final promulgation, at 36

CFR 13.65(g)—Whale Protection, Glacier Bay National Park and Preserve.

Section 13.65(b)(1) of the proposed regulations defines various types of vessels, geographic terms, and other terms used in the regulations. The Service expects to use these terms in the various public notices concerning whale protection. In general, these definitions were established by the temporary regulations which expired in 1983. The proposed regulations would add three new terms and revise the meanings of two other terms.

The Service proposes to revise the definition of "pursue" in order to prevent vessels from changing their course or speed so as to approach within one-half nautical mile of a whale. Under the temporary regulations, a vessel could pursue a whale to within one-quarter nautical mile. Recent research has indicated, however, that allowing a vessel to approach as close as one-fourth nautical mile is likely to adversely affect whale behavior.

The Service also proposes definitions for two new terms, "tour vessel" and "private vessel." The proposed regulations would include these categories of vessels in the permit system.

The Service proposes to change the term "commercial fishing" to "commercial fishing vessel," while leaving the intent of the definition the same.

The proposed regulations would add a definition of "vessel use day," a new concept in the permit system. Previously, the permit system was based entirely on the number of motor vessels entering the Bay each day rather than the number of days that vessels used the Bay. On some days, the maximum permitted number of motor vessels entered the Bay, but few vessels left. The resultant accumulation of motor vessels over several days exceeded the level considered to be disruptive to the whales. Therefore, by proposing a motor vessel entrance limit based on the number of motor vessels in the Bay each day rather than merely the number entering each day, the accumulation of vessels should not reach disruptive proportions. The proposed entrance limit would be based on the number of vessels in the Bay. For example, if the limit were 21 vessels, and 21 vessels were already in the Bay on a given day, no more would be allowed to enter. NMFS agrees with the approach of limiting the total number of motor vessels in the Bay at any given time.

In practice, implementation of the "vessel use day" concept in the permitting system would probably allow more vessels to enter the Bay for the

following reason. Local users under the expired permit system often applied for an entry permit to sport fish for one or two of the seven days allowed by the permit. Since the proposed permit system would consider the number of motor vessels within the Bay on any given day, others could utilize the unused days on such a permit.

Section 13.65(b)(2) of the proposed regulations requires the superintendent to establish a permit system, and requires all motor vessels (except commercial fishing vessels engaged in fishing and official vessels of the State or Federal Government) to obtain a permit prior to entering Glacier Bay. The permit system would explain how permits could be obtained, and whom the vessel operator must contact upon entering and leaving the Bay. It would also establish limits on vessel entries as well as the number of vessels in the Bay at any given time when whales are present. The permit system and the allocation of entries and use limits would be announced in accordance with 36 CFR 13.30, which details procedures for closing areas or restricting activities.

The permit system would be based on 1976 vessel entry and use levels as recommended by NMFS in its June 22, 1983, Biological Opinion. These base year figures are set forth in § 13.65(b)(2)(iii). Pursuant to § 13.65(b)(2)(iv), the superintendent could increase vessel entry and use levels by up to 20% above the base year figures. This regulatory section would establish limitations on any such increase, in accordance with the following excerpt from the NMFS Biological Opinion:

We believe that no additional vessel traffic should be allowed unless the number of individual whales that enter Glacier Bay remains equal to or is greater than the 1982 level. If under these conditions, the NPS proposes to increase total vessel use from the present level, NMFS believes that an additional increase of no more than 20 percent for the large ship and small vessel categories would be prudent * * * A minimum of two years should be allowed for monitoring and evaluating the effects of such an increase before additional increases are proposed * * * We caution NPS that we are unable to determine the amount of additional vessel traffic in Glacier Bay to which the whales could adjust.

As NMFS suggests, the Service would take a conservative approach in setting any percentage increase within the regulatory guidelines. The whale would be given the benefit of any doubt. The superintendent could always decrease the number of entries if necessary to prevent harm to the humpback whale.

The Service realizes that the public needs to know entry permit levels as early as possible. Commercial operators and visitors to the area must have advance notice in order to plan their activities. Since cruise ship companies book tours well in advance of the summer season, they might suffer serious inconvenience or even financial hardship in the absence of adequate notice of the availability of entry permits. It is not possible, however, for the superintendent to set rigid, long range entry levels and still to react to significant changes in whale activity. Moreover, the Service must review whale activity during a full season before setting entry limits for the next. For these reasons, the Service expects to set entry and use levels, designate whale waters, and provide the details of the permit system for the following year by means of temporary restrictions promulgated on or about September 30 of the preceding year in accordance with 36 CFR 13.30(d). The date of September 30 would allow 30 days from the end of whale season for the Service to analyze research, monitor data and make the necessary determinations. In addition, it would allow potential permittees time to make known their needs for the next season. (For the 1984 whale season, however, the Service must establish the temporary restrictions this spring. The Service's 1984 proposal is discussed below.) In promulgating annual restrictions, the Service would be guided, *inter alia*, by consultation with NMFS, the Alaska Department of Fish and Game and other public agencies, input received during public hearings on the restrictions as well as during the General Management Plan, and ongoing research and whale monitoring.

Research has been and will continue to be an important factor throughout the Service's decisionmaking on the humpback whale in Glacier Bay. In the expired regulations, the Service relied heavily on the 1979 NMFS Biological Opinion and the research data on which it was based. In the regulations proposed today, the Service relies on the 1983 NMFS Biological Opinion and accompanying research. The proposed regulations would further direct the superintendent to consider ongoing research and whale monitoring in determining appropriate vessel use of the Bay each year. The Service has established a whale monitoring program which will remain an integral part of the management of Glacier Bay for many years. In addition, the Service contracted for a study of whale prey species. NMFS conducted this study in the summer of 1983. A final report is

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expected in the spring of 1984. Finally, the Service has earmarked funds for whale behavior research during the summer of 1984. As funds are available, prey research projects will continue for several years.

Section 13.65(b)(3) of the proposed regulations contains operating restrictions designed to prevent vessels from approaching or pursuing whales. With modifications, these restrictions come from the expired temporary regulations. The most significant of the modifications would allow only those commercial fishing vessels which are actively trolling or setting long lines to come within one-fourth nautical mile of a whale. Previously all commercial fishing vessels were allowed within that distance regardless of their fishing methods. Fishing methods other than trolling and setting long lines involve erratic actions that might disrupt whales located within a one-quarter nautical mile radius of the activity.

Section 13.65(b)(4) of the proposed regulations contains a process for designating whale waters and establishing vessel use restrictions within those waters. Upon entering the Bay, the whales select feeding sites where they may remain for several days or even weeks. When it becomes obvious, through the whale monitoring process, that a whale has selected a feeding area, those waters would be declared "whale waters". The public would be notified in accordance with the provisions of 36 CFR 13.30(d) by (1) posting notices in public places in the surrounding communities, (2) holding a public meeting in the nearby community, (3) publishing notice in the United States Coast Guard *Notice to Mariners*, (4) providing maps and information to local and statewide newspapers, and (5) informing all permittees. Appropriate vessel use restrictions would be included in the process to prevent vessels from influencing whale behavior. Typically, these restrictions would require a reduced speed of ten knots or less and a steady, or mid-channel, course when in whale waters. As in the past, the Service would attempt to designate the minimum area necessary to provide for the whale's needs without severely restricting normal boating activities. When the whale moves on, new whale waters would be designated, and the former whale waters designation would be removed. By necessity, the Service must be able to initiate the designation process quickly. Obviously, a whale may appear in the Bay overnight and show every indication of remaining in an area for an extended stay. In this

situation, the time between notice and public meeting could be as short as a single day. Most elements of the designation process have been utilized previously and have worked well.

Section 13.65(b)(5) of the proposed regulations lists the various genera which have been identified as whale prey at some time in their life cycle. This list is not all inclusive, but represents those genera which could be pursued by fishermen with consequent impact upon the whale's food supply.

1984 Whale Season Restrictions

The Service cannot provide the extensive lead time for the 1984 whale season that it will provide for future whale seasons. In accordance with the procedures of 36 CFR 13.30(d) concerning temporary restrictions, and contemporaneously with the permanent regulations proposed herein, the Service is announcing its proposed 1984 vessel entry and use levels, whale water designations, and permit system details through publication in the State and local media and the following discussion. The Service will conduct an informal public hearing on the proposed 1984 restrictions in Gustavus, Alaska on April 26.

Proposed Temporary Restrictions for June 1–August 31, 1984

I. Permit System Details

A. The number of cruiseship, tour vessel, and charter vessel entries will be limited by means of concession agreements. Private vessels will be limited by vessel permits. Private motor vessel permits will be issued up to 60 days in advance on a first come basis for up to seven calendar days. (Local private vessels—those individuals from Gustavus, Hoonah, Pelican and Elfin Cove—will be issued entry permits in accordance with the private vessel permit system. These permits for local private vessels will be valid for seven use days rather than seven calendar days.) Only two consecutive permits may be issued to any vessel operator, except between July 1 and July 15 when only one permit will be issued. Vessels must confirm their permits 48 hours in advance of their scheduled entry. Unconfirmed reservations will be cancelled. These permits can be obtained by contacting the Glacier Bay National Park, Gustavus, Alaska, 99826. Phone (907) 697-3522.

B. Prior to entry or departure of Glacier Bay, a motorized vessel must notify the park office by phone at (907) 697-3522 or marine radio, Channel 16, KWM20, Bartlett Cove.

II. Motor Vessel Entry and Use Levels

A. Cruiseship entries into Glacier Bay are limited:

1. to two vessels per day, with no more than two vessels in the Bay on any given day;

2. a total of 89 vessels.

B. Tour vessel entries into Glacier Bay are limited:

1. to three vessels per day, with no more than three vessels in the Bay on any given day;

2. to the 228 entries currently authorized by concession agreements.

C. Charter vessel entries into Glacier Bay are limited to the 218 authorized in concession agreements.

D. Private vessel entries into Glacier Bay are limited to 339 vessel entries per season, with 21 vessels allowed in the Bay on any one day. Total vessel use days are limited to 1428 during whale season. Four entry permits will be issued each day between June 14 and August 15, and three permits will be issued each day during the remainder of whale season.

III. Whale Water Designation

Whale waters are between the mouth of Glacier Bay and a line drawn from the northern tip of Strawberry Island to the northern tip of Lars Island, including Bartlett Cove and Beardslee Entrance. All motorized vessels in permanent whale waters will maintain speeds of ten knots or less through the water. Also motorized vessels over 16 feet in length, that are not engaged in fishing or under sail, will navigate as close to mid-channel course as possible between the northern and southern limits of these permanent whale waters. Where possible vessels shall remain at least one mile from the shoreline at all times. Vessels shall avoid actions that will result in closing with a whale.

Additional Information

The National Marine Fisheries Service Biological Opinion is included as an addendum to this announcement.

Public Participation

It is the policy of the Department of the Interior that whenever practicable the public will be afforded an opportunity to participate in the rulemaking process. Accordingly, interested persons may submit written comments, suggestions or objections regarding these proposed regulations to the address noted at the beginning of this rulemaking. To aid the National Park Service in the review and analysis of public comments, commenters should address each section separately, preferably in a separate paragraph.

Draft or revised regulatory language is specifically requested in instances where the proposed regulation is judged to be inadequate.

Public meetings concerning these regulations will be held as follows:

April 25, 1984—Hoonah, Alaska
 April 26, 1984—Gustavus, Alaska
 April 26, 1984—Anchorage, Alaska
 April 27, 1984—Elfin Cove, Juneau, Alaska
 April 28, 1984—Pelican Cove, Alaska

Drafting Information

The following persons participated in the writing of the regulation: Michael Tollefson, Don Chase, Larry Bright, and Gary Vequist, Glacier Bay National Park and Preserve; Robert Babson and Molly N. Ross, Office of the Solicitor, Anchorage; Joseph Alston, Allan Lovaas and J. W. Tanner, National Park Service, Anchorage, Alaska.

Paperwork Reduction Act

The information collection requirements contained in this regulation have been submitted to the Office of Management and Budget for approval as required by 44 U.S.C. 3501, *et seq.*, and assigned clearance number 1024-0016.

Compliance With Other Laws

The Service has determined that this rulemaking is not a "major rule" within the meaning of Executive Order 12291 (46 FR 13193, February 19, 1981). In accordance with the Regulatory Flexibility Act (94 Stat. 1164, 5 U.S.C. 601, *et seq.*), the Service has determined that the regulations proposed in this rulemaking will not have a significant economic effect on a substantial number of small entities, nor does it require the preparation of a regulatory analysis. The Service makes this finding because the proposed regulations will impose no significant costs on any class or group of small entities.

As required by the National Environmental Policy Act (42 U.S.C. 4332, *et seq.*), the National Park Service has prepared an environmental assessment and finding of no significant impact. Copies of these documents are available at the address listed at the beginning of this rulemaking.

List of Subjects in 36 CFR Part 13

Aircraft, Alaska, National parks, Penalties, Traffic regulations.

Authority

Act of August 25, 1916 (39 Stat. 535, as amended, 16 U.S.C. 1, *et seq.*); Presidential proclamations Nos. 1733 (43 Stat. 1988), 2330 (53 Stat. 2534), and 4618 (43 FR 57053); Endangered Species Act

of 1973 (87 Stat. 884); 16 U.S.C. 1531; Marine Mammal Protection Act of 1972 (86 Stat. 1027), 16 U.S.C. 1361, Alaska National Interest Lands Conservation Act, 16 U.S.C. 3170(a).

In consideration of the foregoing, it is proposed to amend 36 CFR 13.65 as follows:

PART 13—NATIONAL PARK SYSTEM UNITS IN ALASKA

1. Paragraph (b) is revised to read as follows:

Glacier Bay National Park and Preserve

* * * * *

(b) *Whale Protection.*

(1) *Definitions.* As used in this section:

"Charter Vessel" means any motor vessel under 100 tons gross that is rated to carry up to 49 passengers for hire on an unscheduled basis.

"Commercial Fishing Vessel" means any motor vessel conducting fishing activities under the appropriate commercial fishing licenses as required and defined by the State of Alaska.

"Cruise Ship" means any motor vessel at or over 100 tons gross carrying passengers for hire.

"Glacier Bay" means all marine waters within Glacier Bay National Park and Preserve north of an imaginary line between Point Gustavus and Point Carolus.

"Large Vessel" means any motor vessel at or exceeding 100 tons gross.

"Motor Vessel" means any vessel propelled, or capable of being propelled, by machinery (including steam) whether or not such machinery is the principal source of power.

"Mouth of Glacier Bay" means that part of Glacier Bay located on an imaginary line between Point Gustavus and Point Carolus.

"Private Vessel" means any motor vessel used for recreation that is not engaged in commercial transport of passengers, commercial fishing or official business.

"Pursue" means to alter a vessel's course or speed in a manner which results in retaining a vessel at a distance less than one-half nautical mile of a whale.

"Small Vessel" means any motor vessel less than 100 tons gross.

"Tour Vessel" means any motor vessel under 100 tons gross that is rated to carry more than 49 passengers for hire or any small motor vessel regularly scheduled for hire.

"Vessel" includes every type or description of craft, other than a seaplane on the water, used or capable of being used as a means of transportation on the water, including a

buoyant device permitting or capable of free flotation.

"Vessel Use Day" means any continuous period of time that a vessel is in Glacier Bay between the hours of 8 a.m. on one day to 8 a.m. the next day.

"Whale" means any humpback whale (*Megaptera novaeangliae*).

"Whale Season" means the period from June 1 through and including August 31 of each year.

"Whale Waters" means any portion of Glacier Bay having a high probability of whale occupancy, based upon recent sightings and/or past patterns of occurrence.

(2) *Permits.* (i) No motor vessel may enter Glacier Bay without a permit issued pursuant to this section, except:

(A) Commercial fishing vessels engaged in fishing within Glacier Bay.

(B) Motor vessels engaged in official business of the State or Federal Government.

(ii) In accordance with 36 CFR 13.30 and 13.65(b)(4)(iii), the superintendent shall develop, announce, and implement a permit system for motor vessels which details:

(A) How permits can be obtained.

(B) Whom the operator must contact when entering and leaving Glacier Bay.

(C) The maximum number of motor vessel entries to be allowed each day during the whale season.

(D) The maximum number of motor vessels to be allowed in Glacier Bay on any one day during the whale season.

(E) The maximum number of motor vessel entries for the whale season.

(F) The allocation of entry permits among commercial and private motor vessels.

(G) The maximum length of stay in Glacier Bay for motor vessels.

(iii) The permit system will be based on the following figures for 1976 motor vessel use:

(A) Cruiseships are limited to two vessel entries per day with a total of no more than 89 vessel entries during the whale season.

(B) Tour vessels are limited to three vessel entries per day with a total of no more than 228 entries during whale season.

(C) Charter vessels are limited to five vessels within Glacier Bay per day with a total of no more than 218 entries during whale season. The charter vessel use day total for the whale season shall not exceed 426.

(D) Private vessels are limited to twenty-one vessels within Glacier Bay per day with a total of no more than 339 entries during whale season. The private vessel use day total for the whale season shall not exceed 1,428.

(iv) In compliance with June 22, 1983, National Marine Fisheries Service Biological Opinion, the superintendent may increase the vessel entry and use levels by up to 20% for each category of vessel as listed in § 13.65(b)(2)(iii). Any increase in these figures shall be followed by two years during which entries and use levels shall remain at or below the increased figure. The superintendent may lower entry and/or use levels by any percentage to achieve a level which, in the superintendent's judgment, will not be detrimental to the humpback whale.

(3) *Operating Restrictions.* (i) No vessel will intentionally position itself within one-quarter nautical mile of a whale. Vessels accidentally positioned within one-quarter nautical mile of a whale must slow to ten knots or less without changing into a reverse gear unless impact is likely. The vessel course as practicable until one-quarter nautical mile of separation is established. Shifting of gears should be avoided. Commercial fishing vessels actively trolling or setting long lines are exempt from the requirements of this subparagraph.

(ii) No vessel will pursue or attempt to pursue a whale.

(4) *Designation of Whale Waters/Vessel Use Restrictions.* (i) Designation of whale waters within Glacier Bay and establishment of vessel use restrictions therein during whale season shall be established, as necessary, by the superintendent pursuant to the provisions of 36 CFR 13.30.

(ii) Maps of designated whale waters and notices of applicable vessel use restrictions shall be made available to the public at park offices at Bartlett Cove and Juneau, Alaska, and shall be published by the U.S. Coast Guard as a "Notice to Mariners."

(iii) In the designation of whale waters and establishment of vessel use restrictions, the superintendent's decision shall be based upon the following considerations:

(A) Consultation with the National Marine Fisheries Service and the Alaska Department of Fish and Game;

(B) Glacier Bay National Park and Preserve General Management Plan;

(C) Consultation with interested public agencies;

(D) Research and monitoring of whale activity in Glacier Bay;

(E) Public comment;

(F) Vessel traffic patterns;

(G) Such other considerations as may be deemed appropriate.

(iv) Failure to comply with vessel use restrictions established by this subparagraph is prohibited.

(5) *Restricted Commercial Fishing Harvest.* Actively fishing for, or retaining if accidentally caught, herring (*Clupea*), capeline (*Mallotus*), sandlance (*Ammodytes*), euphausiids (*Thalassia*), or shrimp (*Pandalus* and *Pandalopsis*) within Glacier Bay is prohibited throughout the year.

(6) The information collection requirements contained in 13.65(b)(2) have been approved by the Office of Management and Budget under 44 U.S.C. 3507 and assigned clearance number 1024-0016. The information is being collected to allow the superintendent to issue permits to allow vessels into Glacier Bay during the whale season. This information will be used to grant administrative benefits.

2. Paragraphs (c) through (f) of § 13.65 are removed.

Dated: April 4, 1984.

G. Ray Arnett,

Assistant Secretary for Fish and Wildlife and Parks.

June 22, 1983.

Mr. Roger Contor,

*Regional Director, Alaska Area Office,
National Park Service, 540 West 5th
Avenue, Room 202, Anchorage, Alaska*

Dear Mr. Contor:

Enclosed is the Biological Opinion prepared by the National Marine Fisheries Service (NMFS) under Section 7 of the Endangered Species Act of 1973 (ESA), concerning the regulation of vessel traffic and resultant interactions with humpback whales in Glacier Bay National Park and Preserve. This opinion was prepared in response to the National Park Service's (NPS) request to reinstate the Section 7 consultation for the endangered humpback whales in Glacier Bay, Alaska.

Based on our recent review of new research as well as additional information, NMFS concludes that current NPS operational and total vessel numbers restrictions are not likely to jeopardize the continued existence of the southeast Alaska stock of humpback whales. We also reiterate the conclusion in our 1979 Biological Opinion that if the amount of vessel use were allowed to increase without limit in Glacier Bay, or if present vessel operational restrictions were removed, the associated disturbance would be likely to jeopardize the continued existence of the southeast Alaska humpback whale stock.

The amount of vessel use that would have the effect of total displacement from Glacier Bay cannot now be defined or predicted. We believe some increase in the amount of vessel use can occur without jeopardizing the continued existence of the southeast Alaska humpback whale stock, provided increases are implemented in a conservative manner and with an appropriate monitoring program.

Consultation must be reinstituted if new information reveals impacts of the proposed activities that may affect the humpback whale, if the identified activities are modified in a manner not considered during the

consultation, or if a new species is listed or critical habitat designated that may be affected by the proposed activities.

We look forward to continued cooperation during future consultations.

Sincerely yours,

Carmen J. Blondin,

for William G. Gordon,

Assistant Administrator, for Fisheries.

Endangered Species Act—Section 7 Consultation—Biological Opinion

Agency: National Park Service (NPS), Department of the Interior (DOI).

Activities Considered During Consultation: National Park Service regulation of vessel use in Glacier Bay National Park and Preserve (formerly Glacier Bay National Monument).

Consultation Conducted by: National Marine Fisheries Service (NMFS), Alaska Region.

Date of Issuance: June 22, 1983.

Background: Glacier Bay, located in the southeast Alaska Alexander Archipelago, is within the summer range of the North Pacific humpback whale (*Megaptera novaeangliae*). The number of humpback whales using Glacier Bay has been documented systematically only in the past ten years (Jurasz and Palmer, draft 1981; Baker and Herman, 1983). Since 1973, the total number of whales seen in the Bay each year during June, July, and August has ranged from 10 to 24 (see Table I). In mid-summer, 1978, all but three of an estimated 23 whales abruptly departed from Glacier Bay, and in 1979, the number of whales in the Bay did not exceed five on any day of record. There are various possible explanations as to what may have caused the early departure and reduced whale use of Glacier Bay. The supposition most publicized at the time was that increases in vessel traffic had produced intolerable levels of noise and harassment which resulted in near abandonment of the Bay by humpback whales.

NPS, the federal agency charged with the management of the Glacier Bay National Park and Preserve, has the authority to regulate visitor/vessel use of the Bay. Under NPS stewardship, the level of small craft (vessels less than 100 gross tons) traffic in the Bay increased approximately fourfold between 1968 and 1978. Although large ships (vessels 100 gross tons or larger) have visited Glacier Bay since the late 1800's prior to 1970 such visits were intermittent and ranged from zero to four per year. Large ship visits, which usually occur only during daylight, peaked at 143 vessel-use days in 1977 (see Table II).

Based upon information and observations available in 1979, the NPS

and NMFS concluded that unrestricted vessel use of Glacier Bay may affect the endangered humpback whale. Pursuant to Section 7(a)(2) of the Endangered Species Act of 1973 (ESA), the NPS requested formal consultation with NMFS regarding NPS management of vessel traffic in Glacier Bay. On December 3, 1979, NMFS issued a Biological Opinion (Appendix I) to the NPS on actions controlling vessel activity that may affect the humpback whales within Glacier Bay. In that opinion our interpretation of available data was that uncontrolled increases of vessel traffic, particularly of erratically traveling charter/pleasure craft, probably altered the behavior of humpback whales in Glacier Bay and may have been implicated in the departure of the whales from the Bay in 1978. NMFS, therefore, concluded that continued increase in the amount of vessel traffic, particularly charter/pleasure craft, in Glacier Bay was likely to jeopardize the continued existence of the humpback whale population frequenting southeast Alaska.

In that opinion NMFS offered several reasonable and prudent alternatives that could be undertaken by NPS to avoid likelihood of jeopardy. These were:

1. restrict total vessel use of Glacier Bay to 1976 levels;
2. implement regulations to govern vessel routing and vessel maneuvering, to minimize whale/vessel interactions and prohibit the willful pursuit and disturbance of whales and inform vessel operators of such regulations;
3. continue to monitor the humpback population and whale/vessel interactions and fully analyze all current data; and
4. conduct new research to (a) characterize the food and feeding behavior of humpback whales in Glacier Bay and other areas, (b) ascertain the acoustic characteristics of vessels within the Bay and in other areas with the aim of identifying equipment and/or modes of operation which are inimical to the whales, and (c) compare behavioral responses of the humpbacks to vessels in Glacier Bay with those observed in other areas of southeastern Alaska.

Subsequent to the release of our Biological Opinion, the NPS promulgated regulations to implement reasonable and prudent alternatives 1 and 2. These regulations (see Appendix II) are discussed later under *Information on the Proposed Activities*. In addition the NPS has continued to monitor that portion of the humpback population using Glacier Bay as recommended in reasonable and prudent alternative

number 3. Visitor and vessel use data are summarized in Table II.

Research recommended in reasonable and prudent alternative number 4 was undertaken through the National Marine Mammal Laboratory of NMFS in 1981 and 1982. The research was conducted under three separate contracts requiring parallel and coordinated investigations of prey distribution, acoustic environment, and behavior of humpback whales in southeast Alaska, with particular emphasis on Glacier Bay National Park and Preserve.

Based on new information from the research efforts and the experience of administering the regulations for the 1980 through 1982 field seasons, on February 7, 1983, the NPS requested reinitiation of consultation on NPS management of vessel traffic in Glacier Bay.

During the reinitiated consultation, NMFS reviewed the 1979 Biological Opinion, reports from the three research contractors, NPS regulatory activities in Glacier Bay, and other information concerning endangered humpback whales. This biological opinion is based on that review.

The Scope of this Biological Opinion

Since the issuance of our previous biological opinion on this subject, there has been considerable public and scientific debate about how much vessel traffic should be allowed in Glacier Bay. Implicit in the NPS request for reinitiation of consultation is the question of whether vessel traffic in Glacier Bay may be increased from current levels, and if so, to what extent. Therefore, this consultation considers impacts to humpback whale both from existing and increased vessel traffic in Glacier Bay. Similarly, our opinion on the likelihood of jeopardy addresses both of these situations.

Consultation was conducted only for the endangered humpback whale. No other endangered or threatened species for which NMFS is responsible occurs in Glacier Bay. There are no species proposed for listing as endangered or threatened, nor any designated or proposed critical habitat in Glacier Bay.

Information on the Proposed Activities

The NPS has extended the 1981 and 1982 regulations concerning vessel traffic in Glacier Bay through 1983. Under these regulations, vessel use is controlled by grouping vessels into three major management categories. In one category (large ships and private boats), vessels have both seasonal and daily entry quotas. Vessels in a second category (charter and concession boats) have a seasonal entry quota.

Vessels in the third category (fishing vessels and Federal/State vessels) are exempt from seasonal and daily entry quotas. Large ships are scheduled to enter and depart the Bay on the same day, the equivalent of one vessel-use day. The time between entry and departure of small craft is more variable, ranging from 1 to 10 or more vessel-use days. In 1981 and 1982, from June 1 to August 31, large ships (cruise ships, state ferries, or foreign and military vessels over 100 gross tons) were limited to not more than two entries per day with a seasonal maximum of 89 entries for cruise ships and 3 entries for other large ships. During the same period, private/pleasure craft were limited to 21 entries per day with a seasonal maximum of 538 entries. Charter and concession vessels were limited to 1976 entry levels. Fishing vessels and federal/state vessels used for official purposes were exempt from entry quotas. Based on NPS statistics from June 1–August 31, 1982, large ships accounted for 87 vessel-use days (column E, Table II) and small craft (all kinds, including fishing and Federal/State vessels) for 2,794 vessel-use days (columns H+K+M+N, Table II).

The regulations also provide that no motorized vessel, except commercial fishing or charter vessels actively fishing, may intentionally be positioned within one-fourth mile of a whale. No vessel may pursue or attempt to pursue a whale.

Additionally, within "Designated Whale Waters" (areas where recent sightings and/or past patterns indicate a high probability of whale occupancy), all vessels must be operated along a steady course at a constant speed of ten knots or less through the water, unless safety considerations dictate otherwise. All vessels larger than 16 feet in length, with the exception of commercial fishing and charter vessels actively engaged in fishing, are restricted to a mid-channel course (see 45 FR 32228 for the complete text of the regulations).

Biological Background

In the North Pacific, the summer range of the humpback whale encompasses the area from the southern Chukchi Sea south to the subarctic boundary (ca. 40°N) and extends in the east to about Point Conception, California, and in the west to the Sanriku Coast of Honshu Island. Humpbacks range into shallow coastal waters more frequently than other baleenopterids and regularly occur in sheltered inside waters of Prince William Sound and the Alexander Archipelago in southeastern Alaska.

The wintering grounds of humpbacks in the North Pacific are centered in the waters of three areas: (1) Off the coast and adjacent islands of west central Mexico; (2) near the main Hawaiian Islands; and (3) near the Bonin, Ryukyu, and Mariana Islands in the western North Pacific. Some humpbacks that summer in southeastern Alaska are known to migrate to the wintering area off Mexico and other migrate to the wintering area off the Hawaiian Islands. A few are found in southeastern Alaska during all months of the year.

Prior to the rise of modern whaling in the late 1800's, the world population of humpback whales exceeded 100,000 with the majority located in the Southern Hemisphere. The North Pacific population probably numbered roughly 15,000 at the turn of the twentieth century (Rice and Wolman, 1975).

Whaling in southeastern Alaska began with the establishment of two land stations in 1907. The number of humpback whales in southeast Alaska at the start of this earliest exploitation is unknown. Consistent catch records are available only for 1912-1922, during which time 185 humpbacks were taken off southeast Alaska, with a peak catch of 39 in 1916 (Rice and Wolman, 1975). Since 1922, no whaling has been conducted in the waters of southeastern Alaska. However, the humpback whales of these inside waters were exposed to additional exploitation as they migrated across the high seas or through the coastal territorial waters of British Columbia, Washington, California, and Baja California.

By 1966, when humpbacks were given complete legal protection by the International Whaling Commission, the world population of the species had been reduced to about 5,000. The North Pacific population is estimated to be about 1,200 (Rice and Wolman, 1982), of which at least 700 winter in the Hawaiian Islands, and approximately 300 winter in Mexico. Only a few humpbacks have been sighted on the western north Pacific wintering grounds in recent years.

Although humpback whales have been observed to range from Summer Strait northward, little is known of their movements within this range. Some whales may be found in the area throughout the year; however, most arrive in early summer and depart in mid to late fall. Frederick Sound-Stephens Passage and Glacier Bay are known whale concentration areas in which observations have been consistently recorded. As many as 190 and 26 whales have been recorded in these two areas, respectively (Baker and Herman, 1983). Lower Chatham Strait

and western Summer Strait also are known as whale concentration areas, but whale observations have not been recorded consistently in those areas (Mercer, 1977; Consiglieri and Bouchet, 1978). The use of these areas and of specific sites within them varies both during the summer feeding season and between years. It is probable that the primary stimulant for the observed movement is the search for favorable feeding sites where swarms of euphausiids, and schools of herring, capelin, and other small fishes occur. We do not yet know the precise nature of the factors that constitute a favorable feeding area.

Potential Impacts to Endangered Humpback Whales from the Proposed Activity

Vessel traffic in Glacier Bay has the potential to have adverse impacts on endangered humpback whales in the following ways:

1. Noise caused by vessel traffic and the proximity of vessels may disturb whales to the extent the displacement from the Bay occurs; and
2. Physical harm may result from the operation of vessels in areas where whales are present. This harm includes collisions of vessels with whales, entanglement of whales in fishing gear, and deliberate acts of violence to whales by vessel occupants.

The presence of vessels in or adjacent to areas occupied by whales may cause a change in whale behavior, such as cessation of feeding activity, for the duration of the disturbance. Such disturbance levels may cause the whales to leave localized feeding areas temporarily. Repeated disturbance may result in the abandonment of localized feeding areas. Any loss of feeding habitat or interference with feeding activities may affect the ability of these whales to obtain the full summer ration of food necessary for successful reproduction and overwintering. The severity of this loss would depend on the level of interference with feeding activity experienced by whales in Glacier Bay, or on the availability of alternative food supplies outside Glacier Bay.

Vessel/whale collisions have the potential to wound or kill individual whales. Deliberate acts of violence, such as shooting, are unpredictable, but could occur.

Information on the Humpback Whale Derived from NMFS Research

The research conducted during 1981 and 1982 has provided NMFS with documented observations on whale/vessel and whale/prey interactions in

Glacier Bay and nearby waters. Salient points of prey distribution, the acoustic environment, behavior research, and the status of the humpback whale in southeast Alaska are discussed below.

Prey Distribution

Although Glacier Bay generally is acknowledged as an important humpback whale feeding area, little quantitative information on its importance as such an area existed prior to 1981. In the 1981-1982 prey study, statistically significant differences in zooplankton catches and acoustic assessment data were noted between study areas and study years (Wing and Krieger, 1983). Using acoustic backscattering as an index of biomass, Glacier Bay had a higher biomass in 1981 and a lower biomass in 1982 than those from the Stephens Passage/Frederick Sound area during the same years. The interpretation of this variation is complicated by species composition in the water column and the frequent lack of known acoustic target strengths of the recorded prey. Euphausiid catch densities apparently were higher in 1981 and lower in 1982 in Glacier Bay than in Stephens Passage/Frederick Sound. In general, these observations suggest that there is considerable natural variation in abundance of prey species in the areas studied.

Wing and Krieger (1983) also made opportunistic observations on prey density in the presence of humpback whales. Three areas, Bartlett Cove (Glacier Bay), Point Adolphus (Icy Strait), and a border area at the south end of Stephens Passage and northern tip of Frederick Sound, were used consistently by whales. Heavy transient vessel traffic and vessel-related fishing activities occur at these sites. Although in each area the composition of the observed forage species was different, estimated densities consistently were higher in areas where whales were feeding actively than in areas where whales were not feeding at the time of sampling. Although sampling effort was not extensive enough to characterize the whole southeast Alaska feeding area, humpback whales appear to feed in areas of high prey densities. The whales' preferred prey, if any, is unknown.

Acoustic Environment

Radiated noise from large ships was found to be a significant contributor to underwater sound levels in both Glacier Bay and Stephens Passage/Frederick Sound (Malme *et al.*, 1982; Miles and Malme, 1983). The slightly higher occurrence of daytime ship passage in

parts of Glacier Bay produced longer periods of ship dominated ambient noise levels in daytime in that area. Because vessel traffic is not limited to daylight hours in Stephens Passage/Frederick Sound, ambient noise levels there are presumed to be greater at night than in Glacier Bay.

Some acoustical differences were found between Glacier Bay and Stephens Passage/Frederick Sound. For example, in the upper reaches of Glacier Bay there was sporadic seismic noise, probably produced by glacier motion; some acoustic "ducting" was detected, produced by salinity and temperature layering in the water column; and "white" noise was produced by melting effervescing glacier ice. These phenomena, not found in Stephens Passage/Frederick Sound, are not of a kind or degree that would explain the recent reduced number of whales in Glacier Bay because presumably they have occurred since the ice started receding 200 years ago. Ambient noise levels generally were very low in both Stephens Passage/Frederick Sound and Glacier Bay (Knudsen Sea State 2 or less), and ranges of ambient noise levels were greater within areas than between areas.

Radiated noise spectra for large ships which frequent Glacier Bay demonstrate a 20 dB spread in radiated sound energy, with newer diesel powered cruise ships significantly noisier than older, steam turbine powered cruise ships. The effect of vessel-related noise on whale communication is not known. Although sound produced by the diesel powered cruise ships could mask whale sounds totally at a range of 100 m or less, low frequency whale vocalizations can be louder than sounds from steam turbine powered cruise ships and most small craft moving at 10 knot speeds.

Behavior Research

Recent behavioral research (1981-1982), conducted after operational restrictions and traffic regulations were implemented, has shown that whales can be affected by vessels up to 3 kilometers away (Baker *et al.*, 1982; Baker *et al.*, 1983). Measurements of changes in whale respiration rate, dive time, swimming speed and direction of movement were analyzed in relation to speed, distance, direction of travel, and radiated noise of passing vessels. These responses were attributable to several aspects of vessel operation, rather than noise alone.

Two avoidance strategies were noted: horizontal, in which the whales changed directions and moved away from the approaching vessel; and vertical (usually employed in the presence of

vessels within 1 km), in which the whales either dived deeper or stayed down longer. Changes in pod composition (affiliation or disaffiliation) and aerial behaviors such as breaching, and fluke and pectoral slapping also were correlated with the presence of vessels (particularly large vessels) and with close approaches of all vessel types. A high correlation was reported between sudden changes in sound intensity (the result of changes in engine speed or propeller pitch) and the onset of aerial behaviors.

Two examples of prolonged interactions between whales and vessels are noteworthy. Four whales were present in Bartlett Cove, which has the heaviest volume of vessel traffic in Glacier Bay, for five weeks of the 1982 season (Baker *et al.*, 1983). Intermittently, for shorter periods, these four were joined by as many as five additional whales. The whales appeared to be attracted to the area by a school of capelin occupying part of the Cove (Wing and Krieger, 1983). Although some changes in behavior (attributable to vessels) were observed, the heavy vessel traffic did not prevent whales from using the area.

At Pt. Adolphus, across Icy Strait from Glacier Bay, seven to ten whales were observed each day from July 9 to August 15, 1982. The area was documented by Wing and Krieger (1983) to be one of considerable prey abundance. Whales continued feeding in the area, although the area often was occupied by up to a dozen slowly moving (1-2 knots) commercial salmon trolling boats and occasionally was traversed by private, excursion, and research craft. At times the whales were only tens of meters away from fishing boats and apparently were undisturbed (Baker, 1983). This type of interaction between vessels and whales has been observed casually throughout southeast Alaska. Although no quantitative data on whale reactions to fishing vessels are available, in areas like Pt. Adolphus, humpback whales feeding on abundant forage apparently largely ignore slowly moving vessels.

However, there was one incident at Pt. Adolphus involving displacement of a whale from the area following close passes by two high-speed pleasure boats. The subject whale had been tagged and under close observation for 10 days prior to the event. During the 10-day period, the whale did not move more than a few kilometers (2-3 km) along the shore to either side of Pt. Adolphus. After the initial pass of the two high-speed boats, the boats turned around and made a second pass near the whale. Following the second pass, the tagged whale moved 10 kilometers

away and did not return until the next day (Baker, 1983).

Southeast Alaska Humpback Whale Population Status

There is little evidence from which to conclude that the North Pacific humpback whale population is increasing or is larger than 1,200 whales. As part of the Glacier Bay, Stephens Passage/Frederick Sound behavior studies, 34 humpback whales were identified photographically in 1980, 122 in 1981, and 167 in 1982. After accounting for individuals that were sighted more than once, a total of 257 individual humpback whales was obtained. Baker and Herman, (1982) applied a frequency of capture model (Caughley, 1977) to the 1981 photographic data and obtained a population estimate of 324 whales in southeast Alaska for 1981. This is about five times greater than the number reported from a combined aerial/vessel survey of the area in 1975 (Rice, 1977). Much of the difference between the two estimates probably is due to improved observation techniques, increased sighting effort, and possibly shifting whale-use patterns. However, there also is general agreement among southeast Alaska whale researchers that more humpbacks appeared to occupy Stephens Passage/Frederick Sound (the most heavily occupied feeding area in southeast Alaska) in 1981-1982 than five and six years earlier.

Information on the Humpback Whale Derived from Other Research

Humpback whales that summer in southeast Alaska may constitute a separate stock of the north Pacific population. Photographs of whale flukes taken in southeast Alaska and compared to photographs taken in other areas of Alaska showed no evidence of whale movement between areas. A similar situation exists in the North Atlantic. There humpback whales have a common reproductive and wintering area in the Caribbean Sea, and separate summer feeding areas off the northeastern United States and eastern Canadian coasts, with no detectable interchange of whales between the two (Prescott *et al.*, 1981).

In the northwest Atlantic, Whitehead and Lien (In Press) found that the abandonment and subsequent reuse of offshore feeding areas by humpback whales were related to abundance of the offshore capelin stock. Similarly, the 1978 departure of whales from Glacier Bay may have been related in part to changes in the availability of prey in that area.

In another case, a dredge operating continuously in the mouth of the Laguna Guerrero Negro apparently drove gray whales out of the lagoon between 1957 and 1967 (Gard, 1974). The whales returned in substantial numbers after the dredge was removed. This suggests that gray whales may have a tolerance threshold for vessel activity beyond which they will abandon a site. A similar tolerance level to vessel traffic may exist for the humpback whale.

Unregulated vessel traffic in Glacier Bay is thought to have contributed to the abrupt departure of some of the whales frequenting Glacier Bay in 1978. According to Dean *et al.* (1983, draft report), who reported on behavioral research conducted before operational restrictions and traffic regulations were implemented in Glacier Bay, humpback whales have significantly different respiration patterns when vessels were present than when no vessels were present. Between 1976 and 1979, a period of greatly increased vessel traffic in Glacier Bay, those authors noted an increased frequency of shortened blow intervals, longer dive times, and aerial behavior in the presence of vessel related stimuli.

Cumulative Impacts

Humpback whales are exposed to vessel traffic throughout their summer and winter ranges. These whales also frequent the Outer Continental Shelf in the Gulf of Alaska where the Department of Interior is conducting oil and gas leasing. As human activities increase in areas occupied by humpback whales, cumulative effects, including the possible loss or abandonment of habitat may occur.

Increases in the number of commercial and pleasure craft in both southeast Alaska and Hawaii will result in increased incidence of interactions between whales and vessels. In a regulated environment such as Glacier Bay, these interactions can be maintained at a level that should not appreciably add to the overall cumulative impacts. Conversely, uncontrolled increases in vessel traffic probably will result in increased interaction between whales and vessels, or the possible loss or abandonment of habitat and would add to the cumulative impacts. Any increase in vessel traffic allowed by NPS within Glacier Bay probably would add to the level of traffic experienced by humpback whales throughout southeast Alaska and thereby contribute to cumulative impacts.

Conclusions

The current humpback whale population for the north Pacific is approximately 1,200 whales. A recent estimate for southeast Alaska is approximately 300 animals. Whether that number approaches the carrying capacity for the area is unknown. During the summer season, three percent to eight percent of the whales in southeast Alaska may frequent and remain for various amounts of time in Glacier Bay. The normal seasonal and year-to-year distributions and movements of whales in southeast Alaska show variations that probably are related to food availability, various external stimuli, and social interactions. Specific information about these variations and their importance is not available. We conclude, however, the Glacier Bay is an important summer feeding habitat for humpback whales because of the abundance and diversity of forage species generally present.

Southeast Alaska apparently is a discrete feeding area for humpback whales, with no known exchange of whales with any other Alaska feeding area. The relative importance of Glacier Bay to other feeding areas in southeast Alaska varies as both natural and man-caused events affect local productivity and availability of prey. If prey resources decrease and become limiting for humpback whales in other areas, then exclusion of the whales from Glacier Bay would further reduce available food resources.

We believe that the present level of vessel use and operational management of vessels in Glacier Bay are not likely to jeopardize the continued existence of the southeast Alaska humpback whale stock. Based on the information available to us, these levels of vessel use are as follows: for vessels over 100 gross tons (large ships) a maximum of 2 vessels per day with a maximum of 92 vessel-use days from June 1 to August 31; for vessels under 100 gross tons (small craft) a maximum of 40 vessels per day with a maximum of 2,794 vessel-use days from June 1 to August 31. Operational restrictions on vessels are as follows: except for commercial fishing or charter vessels actively fishing, no motorized vessel may intentionally be positioned within one-fourth of a mile from a whale; no vessel may pursue or attempt to pursue a whale; within "Designated Whale Waters" (areas where recent sighting and/or past patterns indicate a high probability of whale occupancy) all vessels must be operated along a steady course at a constant speed of ten knots or less through the water, unless safety

considerations dictate otherwise, except for commercial fishing and charter vessels actively engaged in fishing, all vessels larger than 16 feet in length are restricted to a mid-channel course.

The regulations published by NPS to control vessel use and vessel traffic in Glacier Bay effectively implement the reasonable and prudent alternatives provided in our previous Biological Opinion and, we believe, are the appropriate management tools to protect the humpback whales in Glacier Bay.

Although the amount of vessel traffic that would be likely to displace the whales from Glacier Bay is unknown, NMFS believes that some increase in vessel traffic can occur in Glacier Bay without jeopardizing the southeast Alaska humpback whale stock. This belief is based upon NPS' ability to control both the amount and operation of vessel traffic in the Bay and to monitor the effects of any increase. Below we discuss this in greater detail and offer recommendations on management and monitoring programs.

Based on Baker and Herman (1982, 1983), Dean *et al.* (1983), Gard (1974), and other analyses, we believe the potential relationship between the level of vessel use and the abrupt departure of a major portion of the whales frequenting Glacier Bay in 1978 cannot be dismissed. As stated in the 1979 Biological Opinion, NMFS believes that if the amount of vessel traffic in Glacier Bay was allowed to increase without limit or if the existing restrictions on the operation of vessels within the Bay were removed, the associated disturbance would be likely to jeopardize the continued existence of the southeast Alaska humpback whale stock.

Finally, NMFS concludes that any increase in vessel traffic allowed by NPS within Glacier Bay probably will add to the level of traffic encountered by humpback whales in southeast Alaska and thereby add to cumulative impacts to the humpback whale.

Recommendations

Section 7(a)(1) of the Endangered Species Act requires that Federal Agencies use their authorities in furtherance of the purposes of ESA by carrying out programs for the conservation of endangered and threatened species. To help NPS meet this responsibility with respect to human activities in Glacier Bay, we offer the following recommendations with respect to the endangered humpback whale. Proposed adjustments to the vessel-use management program and monitoring plan should be coordinated with NMFS. This will require a long-term

commitment on the part of NPS and NMFS.

1. *Management.* We believe that no additional vessel traffic should be allowed unless the number of individual whales that enter Glacier Bay remains equal to or is greater than the 1982 level. If under these conditions, the NPS proposes to increase total vessel use from the present level, NMFS believes that an initial increase of no more than 20 percent for the large ship and small vessel categories would be prudent. This would allow a maximum of two large ships per day with a maximum of 111 vessel-use days and a maximum of 48 small craft per day with a maximum of 3,352 vessel-use days during the period June 1–August 31. A minimum of two years should be allowed for monitoring and evaluating the effects of such an increase before additional increases are proposed.

We caution NPS that we are unable to determine the amount of additional vessel traffic in Glacier Bay to which the whales could adjust. If the results of the monitoring program indicate that humpback whales are being displaced from the Bay by vessels, appropriate corrective measures should be undertaken, including the reduction of vessel use in the Bay. In conjunction with total vessel-use limitations, the vessel operational restrictions also should be maintained and expanded for vessel management within the Bay. Based on the conclusions of Baker and Herman (1983), we recommend the following changes be adopted: (a) minimum distances to whales should be increased to avoid predictable disturbances to whales, (b) sudden changes in engine speed or propeller pitch should also be avoided, and (c) the size and location of the area designated as whale waters should conform to the observed movement of the whales.

2. *Monitoring.* We recommend the NPS conduct an appropriate monitoring program with the following emphasis:

a. *Monitoring of Whale Presence.*

Annually NPS should conduct a season-long photographic identification census of humpback whales frequenting Glacier Bay and maintain accurate records of number of whales and general patterns of use in the Bay.

In addition, a daily accounting should be made of the approximate number of whales present during the whale season.

b. *Monitoring of Noise Levels.*

Because noise levels may increase if the present vessel-use levels are increased, or if cruise ships other than those now under permit are admitted, we recommend periodic monitoring of underwater noise levels in areas of

Glacier Bay frequented by vessels and whales.

c. *Monitoring of Prey.*

We recommend that studies to determine prey composition and abundance in relation to whale numbers and distribution within the Bay be continued. Without long-term, systematic monitoring of prey resources, the cause(s) of wide and abrupt fluctuations in whale abundance in the Bay will remain undeterminable.

A coordinated study of whale behavior associated with prey species and availability is recommended strongly, the continued residency in 1982 of four whales in Bartlett Cove, in spite of the high levels of vessel traffic, may have been linked to the presence of a preferred food. Some differences in the overall behavior of two whales tagged in 1982 may be attributable to differences in prey availability at their respective locations of Pt. Adolphus and Stephens Passage. Available prey and feeding strategies probably are important variables in a complex equation that determines the response of whales to vessel traffic.

d. *Monitoring of Vessels.* We recommend that vessel use of Glacier Bay continue to be monitored and that accurate records of the types of propulsion systems and proximity of vessels to whales be kept.

3. *Research.*

Additional information is needed on the use of Glacier Bay and other areas in southeast Alaska to explain patterns of abundance, seasonal distributions, habitat uses, and behavioral activities of the humpback whale. Humpback prey preferences presumably exist, but at present are unknown. Additional research on humpback prey and feeding behavior are needed to determine the importance of the composition and density of prey aggregations.

Prey distribution and density are believed to be one of the primary governing factors in whale distribution and density in an undisturbed ecosystem. More research is needed to determine prey density and distribution within Glacier Bay in comparison to other areas of southeast Alaska. Recent research has shown prey production to be highly variable, and we still do not know the minimum level of food availability necessary to support whales in Glacier Bay at historic levels.

Noise level measurements of vessel traffic have been correlated with acoustic study results and behavioral observations. Additional data and analyses of these types are needed to understand better the relationship between levels of vessel noise and the responses of whales.

Because Glacier Bay is part of a larger system, photographic identification work in other whale waters of southeast Alaska is also highly desirable. Such information contributes toward understanding migration patterns, feeding areas, site fidelity, or stock identification, and provides an index of whether the area population is stable, increasing or decreasing. When this information is available it will be possible to compare population fluctuations in Glacier Bay with the rest of the southeast Alaska stock.

Cumulative effects of NPS authorized activities in Glacier Bay in relation to vessel use levels experienced throughout southeast Alaska are a concern. Increases in the number of vessels visiting Glacier Bay is likely to increase vessel traffic to, from, and throughout southeast. We encourage NPS to support research to determine the effects vessels traveling to Glacier Bay have on vessel-use levels in nearby humpback whale concentration areas.

We recommend that NPS begin addressing those research needs recommended in this Opinion. The NMFS would like to cooperate with NPS in the planning and conduct of this research. As the lead agency with responsibilities for endangered cetaceans, we offer our expertise in assisting NPS in this endeavor.

Opportunities for Additional Consultation

Formal consultation under Section 7 must be reinitiated if: (a) New information reveals impacts of the proposed activities that may affect the humpback whale; (b) the identified activities are modified in a manner not considered herein; or (c) a new species is listed or critical habitat is designated that may be affected by the proposed activities.

Whether aircraft activity in combination with vessel traffic in Glacier Bay may affect the endangered humpback whale has not been thoroughly considered by this consultation. At this time aircraft operations have not been implicated in the early departure of a portion of the whales frequenting Glacier Bay in 1978. However, if aircraft use increases or if the type and method of aircraft operation changes, and if such changes may affect humpback whales, then NPS regulation of aircraft activity may require additional consultation.

This biological opinion in no way permits the taking of any endangered whales. Taking of such species is prohibited under Section 9 of ESA and Section 102 of the Marine Mammal

Protection Act. Accordingly, no statement concerning incidental takings pursuant to Section 7(b)(4d) of the ESA is appended to this opinion.

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TABLE I.—HUMPBACK WHALE USE IN GLACIER BAY DURING JUNE, JULY, OR AUGUST

Year	Total number of individuals that entered Glacier Bay	Individuals that established residency in Glacier Bay
1973.....	21	*21
1974.....	10	*10
1975.....	10	*10
1976.....	20	*18
1977.....	24	*21
1978 ¹	23	*7
1979.....	13	*3
1980.....	10	*3
1981 ⁴		
1982.....	20	*6

¹ Year of early whale departure.

² Definition of residency: whales were seen and individually identified by C. Jurasz for at least 4 weeks.

³ Definition of residency: whales were seen and individually identified by C. Jurasz for at least 6 days.

⁴ There were no systematic observations of whale occurrence in Glacier Bay in 1981.

⁵ Residency was reported by Baker & Herman (1983) as animals individually identified for at least 4 weeks.

Data Sources: Charles Jurasz 1973-79 (Dean, 1983); NPS 1980 (personal communication, 1983); NMFS 1982 (Baker and Herman, 1983).

TABLE II.—VISITOR/VESSEL USE OF GLACIER BAY

Year	Visitor Days		Large ship ¹		Private/charter boat ²			Fishing vessels ⁴			Federal/State vessels (official use)		Concession Seasonal ⁵ vessel use-days
	Annual	Seasonal	Annual vessel use-days	Seasonal ³ vessel use-days	Annual entries	Seasonal ³ entries	Seasonal ³ vessel use-days	Annual entries	Seasonal ³ entries	Seasonal ³ vessel use-days	Seasonal ³ entries	Seasonal ³ use-days	
A	B	C	D	E	F	G	H	I	J	K	L	M	N
1965.....	1,800	* 1,500									65	112	
1969.....	16,000	* 14,000	1	1	115	106	424	598	179	716	77	165	
1970.....	27,600	22,120	29	4	165	152	608	559	168	670	112	205	
1971.....	23,644	18,779	27	18	133	122	488	355	106	426	95	199	
1972.....	22,731	17,869	21	14	299	275	1,100	400	120	480	108	220	
1973.....	33,028	25,844	29	21	317	292	1,168	352	105	422	83	151	
1974.....	43,976	38,804	86	73	215	198	792	282	85	338	149	242	
1976.....	85,000	65,816	126	89	453	417	1,668	656	197	787	150	255	368
1977.....	120,000	92,257	143	103	534	491	1,964	523	157	628	182	265	
1978.....	109,000	84,800	126	94	699	643	2,572	458	137	550	131	209	
1979.....	122,600	92,803	131	97	680	625	2,500	566	120	480	147	259	
1980.....	130,500	104,489	141	106	441	406	1,624	422	110	440	165	250	460
1981.....	119,400	96,175	120	91	508	467	1,464	326	100	400	142	219	460
1982.....	131,500	104,398	103	87	415	382	1,632	618	110	440	158	262	460

¹ The category of "large ships" includes cruise ships and other large ships (State ferries, foreign, or military vessels) over 100 gross tons. The categories of "private/charter boats", "fishing vessels", "federal/state vessels", and "concession" are considered to be small craft. Though the NPS recognizes many sub-categories, the distinction is made only between large ships and small craft for purposes of this opinion.

² Seasonal use means use during the period June 1 to August 31.

³ For private/charter boats seasonal entries are estimated based on the assumption that 92% of use occurs during the summer season. For the years 1969-1980 private/charter boats seasonal vessel use-days are estimated based on assumption of an average 4-day stay. In 1981-1982 the private/charter boats vessel use-days are from actual count with 240 included as vessel use-days for charter boats.

⁴ Fishing vessel data are from a combination of actual counts plus estimates. Annual entries refer to vessels fishing anywhere within Glacier Bay National Park and Preserve (including the bays on the outer coast). Seasonal entries are estimated based on the assumption that 30% of the annual entries fish within Glacier Bay during the summer season (June 1-August 31). Fishing vessel use days are estimated based on assumption of an average 4-day stay.

⁵ Estimated.

Data Source: National Park Service, Glacier Bay National Park and Preserve staff.

Appendix I—The National Marine Fisheries Service Biological Opinion Glacier Bay National Monument Released December 3, 1979

UNITED STATES DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

NATIONAL MARINE FISHERIES SERVICE

Washington, D.C. 20235

December 3, 1979.

Mr. John Chapman,
Superintendent, Glacier Bay National
Monument, National Park Service, P.O.
Box 1089, Juneau, Alaska

Dear Mr. Chapman: This letter responds to your August 4, 1979 request for consultation pursuant to Section 7 of the Endangered Species Act of 1973, as amended, relative to the population of the humpback whale in Glacier Bay, Alaska.

Your problem statement of the same date outlines the basic issue of human activity in Glacier Bay National Monument that might be affecting humpback whales. Section 7 of the Endangered Species Act requires that each federal agency issue that its actions do not jeopardize the continued existence of any listed species or result in the destruction or adverse modification of critical habitat of such species. The consultation process requires our comment and opinion on the problem.

Within this context, our response addresses those National Park Service (NPS) actions controlling human activity that may, in turn, affect the humpback whales within Glacier Bay.

Biological Background

In the North Pacific, the summer range of the humpback whale encompasses the area from Bering Strait south to the Subarctic Boundary (ca. 40° N lat) and extends in the east to about Point Conception, California, and the Sanriku Coast of Honshu Island in the west. Humpbacks range into shallow coastal waters more frequently than do most other balaenopterids and regularly occur in sheltered inside waters of Prince William Sound and the Alexander Archipelago in southeastern Alaska.

The wintering grounds of humpbacks in the North Pacific are centered in three areas: (1) the coast and adjacent islands of west-central Mexico; (2) the main Hawaiian Islands; and (3) the Bonin, Ryukyu, and Mariana Islands in the western North Pacific. Some humpbacks that summer in southeastern Alaska are known to migrate to both the Mexican and Hawaiian wintering grounds, although others are found in southeastern Alaska during all months of the year.

Prior to the rise of modern whaling in the late 1800's, the world population of humpback whales exceeded 100,000 mostly in the Southern Hemisphere. The North Pacific population probably numbered roughly 15,000 at the turn of the century.

Whaling in southeastern Alaska began in 1907 with the establishment of two land stations. The number of humpback whales at

the start of this earliest exploitation is unknown. Consistent catch records are available only for 1912-1922, during which time 185 humpbacks were taken, with a peak catch of 39 in 1918.

Since 1922, no whaling has been conducted in the territorial waters of southeastern Alaska. However, the humpback whales of the inside waters were exposed to additional exploitation as they migrated across the high seas or through the coastal territorial waters of British Columbia, Washington, California, and Baja California.

By 1968, when humpbacks were accorded complete legal protection by the International Whaling Commission, the world population of the species had been reduced to about 5,000. The North Pacific population now numbers about 1,000, of which 600 or 700 winter in the Hawaiian Islands, and 200 or 300 winter in Mexico. Only a few humpbacks have been sighted on the western North Pacific wintering grounds in recent years. Since 1966 no trends in abundance have been observed either for the North Pacific population as a whole or on any of its wintering or summering grounds, including southeastern Alaska.

Based upon aerial and vessel surveys, the population that spends the summer in the inside waters of southeastern Alaska numbers at least 70. Photoidentification studies now underway tentatively reveal that the population may exceed 100. Although it ranges throughout the area from Sumner Strait northward, its main concentration areas are Frederick Sound-Stephens Passage, where a minimum of 40 whales occurs, and Glacier Bay, where 20-25 whales occur. Humpback whales congregate in these areas to feed upon the summer blooms of euphausiids, herring, and capelin. Some whales arrive in June and stay on through early September, although as mentioned earlier, other animals appear to remain through the winter months.

When humpback whales historically began occupying Glacier Bay is unknown, but they have occurred there every summer over the past seven years of investigation. Photoidentification techniques indicate that certain individuals repeatedly return to feed there.

The availability of these and other feeding areas in southeastern Alaska has not been constant over the years. Although Glacier Bay has lately been a prominent feeding area, this was not always so since the area was covered by an ice sheet during the 18th century; at that time the humpback population presumably at its maximum pre-exploitation level. There is some indication that a seasonal feeding area in Lynn Canal was avoided by humpbacks coincident with the onset of a herring fishery in 1972. With the cessation of that fishery, humpbacks reoccupied the area in 1979. The possibility cannot be discarded that these events are related.

Present Glacier Bay Situation

The NPS records indicate that during 1976 and 1977, 20-24 individual humpback whales moved into Glacier Bay during June and remained there into August. In 1978 this pattern of use changed when most of the animals departed

by mid-July. In 1979 this use was modified further with fewer whales entering the Bay and very few of those remaining in the Bay. Observations prior to the 1976 are more general in nature, rather than numerical counts of record. Human use of the Bay is reflected in NPS records, to wit:

Year	Visitor days	Large ships	Private boats	Fishing vessels
1965.....	1,800			
1969.....	16,000		115	
1970.....	30,000		165	
1975.....	72,000	113	353	824
1976.....	85,000	123	318	656
1977.....	120,000	142	534	523
1978.....	109,000	123	699	458

Most visitor use is via water access, with cruise ship and recreational craft visitation levels increasing rapidly in recent years.

The recent NPS study indicates that increasing vessel traffic in Glacier Bay may be implicated in the apparent departure of whales from Glacier Bay in 1978 and 1979. Data on the number of observed whale-vessel interactions in Glacier Bay enables calculation of the following "interaction" index (data for 1979 not available):

Year	Whale-vessel interactions	Hours observed	Index (interactions/hour)
1976.....	98	261.1	0.38
1977.....	201	407.1	0.49
1978.....	268	397.5	0.67

Thus the occurrence of whale-vessel interactions increased 29 percent and 76 percent respectively in 1977 and 1978 over the 1976 base level. Despite mitigative regulations in 1979, observers noted that whale-vessel interactions continued at substantial frequencies.

The NPS data indicate that behavior of the humpback whales in Glacier Bay changed significantly in 1978. Comparison of the frequency distributions of behavioral responses indicates that whereas distributions were the same in 1976 and 1977, both years were statistically different from 1978. In 1978, more avoidance behavior occurred than in previous years, suggesting that the whales reacted to the increased level of vessel traffic in 1978. However, the causal mechanism for these reactions (whether it be increased noise or visual stimuli) remains unknown.

All classes of vessels were not implicated equally in the increased level of interactions which occurred in 1978. Cruise ship visitations actually decreased 14 percent in 1978 from the 1977 high, while charter/pleasure craft visitations increased 120 percent between 1976 and 1978. Commercial fishing vessel traffic decreased 30 percent between 1976 and 1978. Charter/pleasure craft were often observed to change direction and travel toward whales for a closer look. Cruise ships and commercial fishing vessels, on the other hand, neither paused for nor actively followed whales. Thus the most likely source for increased interactions would

appear to be the increased visitations by charter/pleasure craft in 1978.

This conclusion seems to agree with the perceptions of scientists examining other similar situations. The workshop on problems related to Hawaiian humpback whales, sponsored by the Marine Mammal Commission in 1977, concluded that vessel traffic not oriented toward whales did not ordinarily seem to disturb them. Indeed, it was concluded that whales seem readily to habituate to constant or familiar noises such as those produced by ships of passage. A recent review on the possible effects of noises emanating from offshore oil and gas development concluded that, unlike the abrupt response to sudden disturbances, most whales become habituated to low-level background noises such as would be associated with ship traffic (Geraci, J. R., and D. J. St. Aubin, "Possible Effects of Offshore Oil and Gas Development on marine Mammals," prepared for the Marine Mammal Commission, August 1979.) Moreover, it was noted that such behavior forms the underlying basis for the success of whale watching cruises. Thus the erratic actions of charter/pleasure craft rather than the more constant action of cruise ships may be the major factor in possible harassment by vessels within Glacier Bay.

Cruise ships also may be implicated as potential sources of disturbance due to the physical setting within Glacier Bay. A direct analogy may be seen in the lagoons of Baja California where gray whales calve. Heavy barges and freighter traffic associated with the salt industry, as well as a dredge operating continuously in the lagoon's mouth, apparently drove gray whales out of Laguna Guerrero Negro between 1957 and 1967. The whales reinvaded in substantial numbers when vessel traffic was eliminated. The continued high use of Laguna Oje de Liebre by gray whales suggests that the movement of salt barges, beginning there in 1967, may not have been such a nuisance. However, since Laguna Oje de Liebre is a much larger area than Laguna Guerrero Negro and has a much wider entrance, the whales there may simply have been able to move and coexist next to the barges. Such luxury of space may not be available to the humpback whales of Glacier Bay and, due to geological configurations of its basin, vessel noise may be accentuated there. These factors may account for the unexpected reaction of humpbacks to cruise ships in Glacier Bay.

The apparent departure of humpback whales from Glacier Bay in 1978 and 1979 may also be due in part to a change in the availability of food. Euphausiids have historically been the primary feed within Glacier Bay in July-August, although little research has been done to compare yearly levels of this feed or to determine what level

is necessary to support the whales. The only available information derives from vertical plankton tows by the REGINA MARIS in August 1979, which indicated that fewer Euphausiids (5 percent) occurred in Glacier Bay as compared to Frederick Sound-Stephens Passage. The humpbacks may have found the Glacier Bay food levels to be too low, particularly in the face of continued high vessel use, and simply departed to search for better concentrations elsewhere.

A similar abandonment of a prime feeding area, the Grand Banks, was observed for the Northwest Atlantic humpback populations and was thought to be associated with the overfishing of capelin stocks there. Consequently, the occurrence and distribution of humpback whales may be generally dependent upon the occurrence and availability of its desired prey species.

In a worst case analysis, Glacier Bay is a feeding ground, and its long-term abandonment would not be conducive to the conservation of the humpback whale. Up to 20 or 25 individual whales would relocate to other areas, increasing competition for food there. In such case a greater expenditure of energy might be required to obtain the same quantities of food than would be required in Glacier Bay. An increased energy expenditure would tend to decrease the likelihood of humpbacks successfully increasing their numbers, since growth and the onset of sexual maturity would be delayed.

Conclusions

Our present interpretation of the available data is that uncontrolled increase of vessel traffic, particularly of erratically traveling charter/pleasure craft, probably has altered the behavior of humpback whales in Glacier Bay and thus may be implicated in their departure from the Bay the past two years. Our conclusion, then, is that continued increase in the amount of vessel traffic, particularly charter/pleasure craft, in Glacier Bay is likely to jeopardize the continued existence of the humpback whale population frequenting Southeast Alaska. The alteration in the distribution of the whales in Southeast Alaska can be expected to appreciably reduce the likelihood of the recovery of the North Pacific humpback population, especially when viewed as an incremental aggravation of the problem of humpback/human interaction in general.

Recommendations

Until research reveals the need for more specific action, if any, we offer the following as reasonable and prudent alternatives that the NPS should institute in Glacier Bay to avoid jeopardizing the continued existence of the North Pacific population of humpback whales:

We recommend that total vessel use of the Bay be restricted to 1978 levels, at the very least, since that year preceded the high point of visitor use in Glacier Bay during 1977. Commercial use of the Bay is predicated on a permit system that should offer good control and accountability of the tour industry. The routing of large vessels is relatively easy to regulate. Recreational craft present the greatest challenge to management control. The continuing increase in the amount of recreational traffic in the Bay lends considerable urgency to establishing effective controls.

Collectively, regulations should address vessel routing and vessel maneuvering. The NPS has already regulated those activities to some extent. Specific routes should be published, but the system should be flexible enough to accommodate changes of areas of concentrated feeding activity.

We further recommend curtailment of vessel operator discretion in pursuing, or approaching, whales. General guidelines prohibiting the pursuit or willful or persistent disturbance of whales through vessel maneuvering probably would offer better enforceability and public compliance than would detailed regulations based on specified distances. Vessel operator behavior should receive a thorough public educational effort, possibly through an informative notice to each vessel.

Finally, we recommend that monitoring of the humpback population and of whale-vessel interactions be continued and that all current data be fully analyzed. New research should also be undertaken (1) to characterize the food and feeding behavior of humpback whales in Glacier Bay and other areas; (2) to ascertain the acoustic characteristics of vessels within the Bay and in other areas with the aim of identifying equipment and/or modes of operation which are inimical to the whales; and (3) to compare behavioral responses of the humpbacks to vessels in Glacier Bay with those observed in other areas of southeastern Alaska.

The conclusions and recommendations stated herein constitute our biological opinion, and we consider consultation on this matter to be at an end. Should significant new information or factors not considered in this opinion arise, however, either we or NPS are obligated to reinitiate consultation.

Sincerely,

Winfred H. Meibohm,

(for) Terry L. Leitzell,

Assistant Administrator for Fisheries.

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